

DISCUSSION OF EXAMINER'S OFFICE ACTION

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75 (d) (1) and MPEP § 608.01(o). Correction of the following is required: The subject matter disclosed in present claims 2, 4, 11, and 15 is not supported by the specification (see paragraph 4 of this office action).

Applicants' Response

Claims 11 and 15 were canceled. Claims 1 and 4 were amended to overcome this rejection.

Claim Objections

The numbering of claims is not in accordance with 37 CFR 1.126. Misnumbered claims 12-15 (the last four claims presently listed) have been renumbered as claims 13-16, respectively. For examiner purposes, it is noted that claims 13 and 15 have been taken to be both dependent on claim 12.

In the rejections that follow please note that the claims referred to are the renumbered claims. A revised version of the claims is attached to this office action.

Claim 10 is objected to because "claim" on line 14 should read as the plural "claims." Claim 16 is objected to because "a round" on line 19 should read as "around." Appropriate correction is required.

Applicants' Response

Claims 10-16 were canceled.

Claim Rejections - 35 USC § 112, first paragraph

The following is a quotation of the first paragraph of 35 U.S.C. §112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2, 4, 11, and 15 (as renumbered per discussion in paragraph 3) are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

With respect to claim 2, while there is support in the present specification for "aromatic solvents" and "polar solvent" (page 7, lines 6-23), there is no support for the presently claimed "hydrocarbon solvents" and "ester

solvents.”

With respect to claim 4, while there is support in the present specification for “bisphenol A” and ‘bisphenol F’ (page 3 me 3), there is no support for the present claimed generic “bisphenol”

With respect to claim 11, there is found no support either explicitly or by incorporating a reference in the present specification regarding removing a foundry shape from a pattern as presently claimed.

With respect to claim 15, there is found no support either explicitly or by incorporating a reference in the present specification regarding a process of casting metal.

Applicants’ Response

Claims 11 and 15 were canceled. Claims 2 and 4 were amended to remove the objectionable language. But Applicants note that the generic language in claim 1 is broad enough to include the components that were removed from claims 1 and 4.

Claim Rejections - 35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. §112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the Applicants regards as their invention.

Claims 4, 9, and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation “the phenolic resole resin” in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim. It is noted that that applicant recites in claim 1 only a “phenolic resole resin composition” and “a phenolic resin,” not “a phenolic resole resin.”

Claim 9 recites the limitation “the phenolic resole resin” in lines 1-2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites the limitation “the phenolic resole resin” in line 1 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Applicants’ Response

Claim 1 was amended to correct this defect.

Double Patenting

Claims 1-16 (as renumbered per discussion in paragraph 3) are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 and 11-16 of U.S. Patent No.

6,288,139. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the reasons given below.

With respect to the stabilized phenolic resole resin composition of present claims 1-9, claims 1-8 of US '139 disclose a mixture of phenolic resin, an ortho ester, and a solvent. It is noted that since present claim 1 recites open claim language "comprising," it is therefore open to other ingredients such as the organic polyisocyanate in claim 1 of US '139.

With respect to foundry binder system of present claim 10, claims 1-8 of US '139 disclose a foundry binder system comprising a phenolic resin, an ortho ester, a solvent, and an organic polyisocyanate.

With respect to the foundry mix of present claim 11, claim 11 of US '139 discloses a foundry mix comprising a binder system and a major amount of an aggregate.

With respect to the processes of present claims 12-16, claims 12-16 of US '139 disclose processes utilizing the binder system.

Claims 1-16 (as renumbered per discussion in paragraph 3) are directed to an invention not patentably distinct from claims 1-8 and 11-16 of commonly assigned U.S. Patent No. 6,288,139. Specifically, see the discussion set forth in paragraph 8 above.

The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP § 2302). Commonly assigned U.S. Patent No. 6,288,139, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter. It is mandatory that applicant submit a statement such as, "Application X and Application Y were, at the time the invention of Application X was made, owned by Company Z." See MPEP § 706,02(1)(2), page 700-5 5 of revised MPEP dated May 2004.

Applicants' Response

Applicants confirm that U.S. Patent No. 6,288,139 and pending application Serial No.10/626,189 were commonly assigned to Ashland Inc. at the time the invention claimed in application Serial No.10/626,189 was made.

Claims 10-16 have been canceled. Claims 1-9 have been amended so that the transitional phrase "comprising" has been replaced with "consisting essentially of". This transitional phrase excludes a polyisocyanate, which is required by the claims of the commonly assigned '139 patent. The inclusions of the polyisocyanate component in the phenolic resole resin component claimed in the subject application would materially affect the composition. The composition would have no shelf stability and not be useful for the purposes of the invention because it is

known that the hydroxyl groups of the phenolic resole resin will react with the isocyanate groups of the polyisocyanate.

The Invention

This invention relates to stabilized phenolic resole resin compositions consisting essentially of a phenolic resole resin and an effective stabilizing amount of an ortho ester. The compositions are used to prepare phenolic urethane binders that are used in preparing foundry shapes, e.g. molds and cores. The foundry shapes are used to make metal castings.

The addition of the ortho ester is an effective stabilizing agent to improve the shelf stability of the phenolic resole resin composition. The advantages of using the ortho ester in the phenolic resole resin composition are:

- (1) the phenolic resole resin composition has better shelf storage stability if it contains the ortho ester, and
- (2) the phenolic resole resin composition has improved heat stability at elevated temperatures if it contains the ortho ester.

Shelf stability and heat stability are demonstrated because the phenolic resole resin composition does not undergo viscosity increase or gelation, even when subjected to increased temperatures. This advantage is particular important when the phenolic resole resin composition is stored and exposed at elevated temperatures during summer time.

Claim Rejections - 35 USC § 102 (b)

The following is a quotation of the appropriate paragraphs of 35 U.S.C. §102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-16 (as renumbered per discussion in paragraph 3) are rejected under 35 U.S.C. §102 (b) as being anticipated by Skoglund (US 6,288,139, cited on IDS dated 7/24/2003).

Skoglund discloses a polyurethane-forming foundry binder system (col. 9, line 55 to col. 10, line 33) comprising the presently claimed phenolic resin (col. 2, line 25 to col. 3, line 19); 0.1-1.5 wt% of the presently claimed ortho ester (col. 4, lines 12-23); 20-80 wt % of the presently claimed solvent (col. 3, lines 9-19; col. 3, line 52 to col. 4, line 11); and a polyisocyanate (col. 3, lines 21-49). A foundry mix (col. 10, lines 34-38) is also disclosed which comprises an effective bonding amount of said polyurethane-forming foundry binder system and a major amount of aggregate (col. 5, lines 32-55). Furthermore, a process of preparing a foundry shape and casting metal are disclosed on col. 10, lines 39-63.

Although applicant has discussed Skoglund on page 2 of the present specification, it is noted that open claim language "comprising" allows for the addition of other ingredients. Therefore, a polyisocyanate is not excluded from present claim 1, and it is clear that Skoglund anticipates the present invention.

Applicants' Response

Claims 10-16 have been canceled. Claims 1-9 have been amended so that the transitional phrase "comprising" has been replaced with "consisting essentially of". This transitional phrase excludes a polyisocyanate, which is required by the claims of the commonly assigned '139 patent. The inclusions of the polyisocyanate component in the phenolic resole resin component claimed in the subject application would materially affect the composition. The composition would have no shelf stability and not be useful for the purposes of the invention because it is known that the hydroxyl groups of the phenolic resole resin will react with the isocyanate groups of the polyisocyanate.

In view of the amendment to claims 1-9, Applicants submit that Skoglund does not anticipate the claims.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Mizutani et al (JP 58-109534).

Pending a full English-language translation, the JPO abstract has been relied upon in the following rejection. Mizutani et al discloses a curable composition suitable for use in molding and casting materials comprising a bicyclo orthoester compound and a curing agent such as a phenolic resin (abstract).

In light of the above, it is clear that Mizutani et al anticipates the presently cited claim.

Applicants' Response

As amended, the claims are limited to ortho esters selected from the group consisting of triethyl orthoformate, trimethyl orthoformate, and mixtures. The Japanese abstract does not disclose either of these ortho esters.

The ortho esters disclosed in the Japanese abstract are bicyclo orthoesters having the structural formula represented by (III) in the abstract. The Japanese abstract discloses that the bicyclo orthoesters are used in making molded materials, adhesives, casting materials, paints, etc. with a curing composition. The curing composition contains a bicyclo orthoester and a curing agent such as a phenolic resin, an organic polybasic acid, and a carboxylic acid-derived polyester. The curable composition results in low volume shrinkage during curing.

The Japanese abstract does not disclose the use of the phenolic resin containing the bicyclo orthoester to make phenolic urethane binders. And it does not disclose that phenolic resin containing the bicyclo orthoester has improved shelf stability and heat stability.

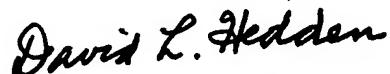
In view of the amendment to claims 1-9, Applicants submit that Mizutani does not anticipate these claims.

Conclusion

In view of the differences between Applicants' invention, as defined by the amended claims, and the prior art, Applicants submit that neither Skoglund nor Mizutani anticipate claims 1-9.

Applicants submit that the application is now in condition for allowance and respectfully request a notice to this effect. If the Examiner believes further explanation of Applicants' position is needed, Applicants' attorney will discuss this matter over the telephone or visit the Examiner personally if this may be useful.

Respectfully submitted,



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